



CASE STUDY

"OUTDOOR-GRAZING PAYMENTS IN DAIRY FARMING" (THE NETHERLANDS)

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1 Introduction: What is the case study about?

Global demand for dairy products is increasing, especially in emerging economies in Asia. According to the 2015 Rabobank vision on dairy farming in the Netherlands ('Milking in balance') the Dutch dairy sector has a strong position on the global market, both with respect to quality and sustainability. Global milk prices have been highly volatile in the past decade and the abolition of the CAP milk quota regime in 2015 has given incentives in the Netherlands to increase milk production. Wholesale milk deliveries to dairy processors in the Netherlands in June 2016 was some 50 million liters above that of June 2015. This is equivalent to an increase of almost 5% (Eurostat, 2016). This was far beyond increases in other EU Member States, since total milk production in EU-28 during this period even dropped by 200 million liters. The Rabobank in her 2010 study 'Anders Melken' ("Other Milking") projected milk production in the Netherlands by 2020 - compared to 2010 - would have increased by about 20%.

Outdoor-grazing is a main feature of dairy farming in the Netherlands and an important public service of the dairy sector (RLI, 2011). This feature is wide appreciated in the Netherlands. It is widely used in the marketing by milk processing; dairy industry does often use grazing in their marketing of products like cheese. The industry does not want to lose these credits from society. However, there is a declining trend in outdoor-grazing, which stabilized in the recent past (Figure 1).

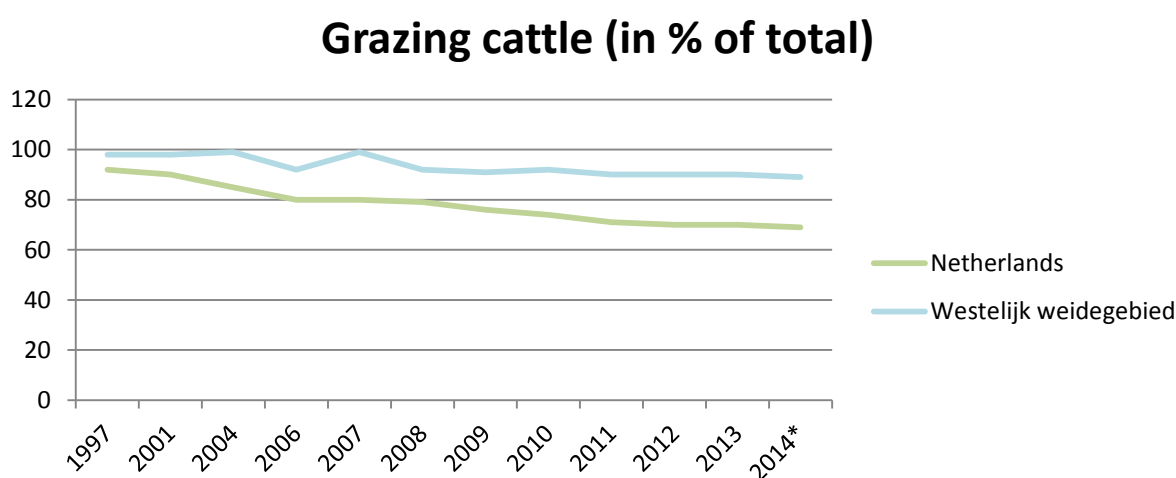


Figure 1 Outdoor grazing of cattle during the period 1997-2014. Source: CBS (2015), Duurzame Zuivelketen.

The Case Study does focus on dairy production in Province North-Holland (Figure 2). 'CONO Kaasmakers' is a co-operative in this region, mainly producing cheese. The company has some 460 members, with a gradual increase in supply of milk (aggregated milk production is 350 million kg). The company initiated a premium for outdoor-grazing already in 2002. In 2016, the premium by CONO to dairy farmers for the delivery of grazing milk is €1 per 100 kg of milk, and is on top of the regular price of milk. Each dairy farmer delivering milk according to the requirements of the 'Duurzame Zuivelketen' is eligible for this payment. The requirements are an effective monitoring that cows are out for grazing during at least 120 days a

year and a minimum of 6 hours a day. Outdoor-grazing is considered essential to reach high quality standards of cheese. By then, the premium paid by CONO was €0,50 per 100 kg of milk. The premium was doubled, starting 1 January 2013 and will again be doubled on 1 January 2017, to reach €2,00 per 100 kg of milk (CONO, 2016). This premium might have supported stabilizing the declining trend in outdoor grazing. As said in the press release (CONO, 2016), the premium is argued (i) to secure a fair price to farmers for outdoor grazing, (ii) to acknowledge outdoor grazing adds to the taste of cheese and (iii) is better for the animals. The premium for outdoor-grazing is embedded in a marketing strategy of the products, not only the national market but the international market (e.g. Germany) as well.

Some 92% of the dairy producers adopt outdoor-grazing, which exceeds national average. Branded cheese 'Beemsterkaas' is produced from branded outdoor-grazing systems. Grass is considered essential for the quality of the product. The size of the parcel near the farm is critical for the outdoor grazing. With an average of 50 ha per farm with outdoor-grazing, the size of the parcel near the farm is some 33 ha. Outdoor-grazing requires additional labour for milking, but reduces costs for feed and disposal of manure. With an average of 55 kg per day, fodder represents more than 90% of the food of dairy cows. This is complemented with an average of 5 kg of compound feed, and composed of maize, soya and other products. Moreover, a cow on average drinks approximately 100 litre of water, and is fed with 100 grams of vitamins and minerals. (source: NZO, 2016).



Figure 2 Case study region in Province Noord-Holland

Since 1999, Beemster is a UNESCO World Heritage Site in a region which was reclaimed from water during the 17th century and currently is some 3-4 meters below sea level. It is put on this list 'as a masterpiece created by humans' with a strict pattern of squares and quadrants. The region is very fertile with clay soils.

2 Definition of the social-ecological system (SES) studied

2.1 Figure of the SES, using the SES Framework

The social-ecological system framework (SES framework) was largely designed with a view to develop a comprehensive picture of the key interactions among the resource system in place, their drivers and outcomes (Figure 3). The SES framework was drawn from a couple of interviews (provincial authority and agribusiness) complemented with a literature review. The SES framework is later on used during the interviews with three dairy farmers in the region, mainly to test whether the comprehensive view is perceived by the interviewees. Some key actors (e.g. municipalities and consumers) are not interviewed during Stage 1 & Stage 2.

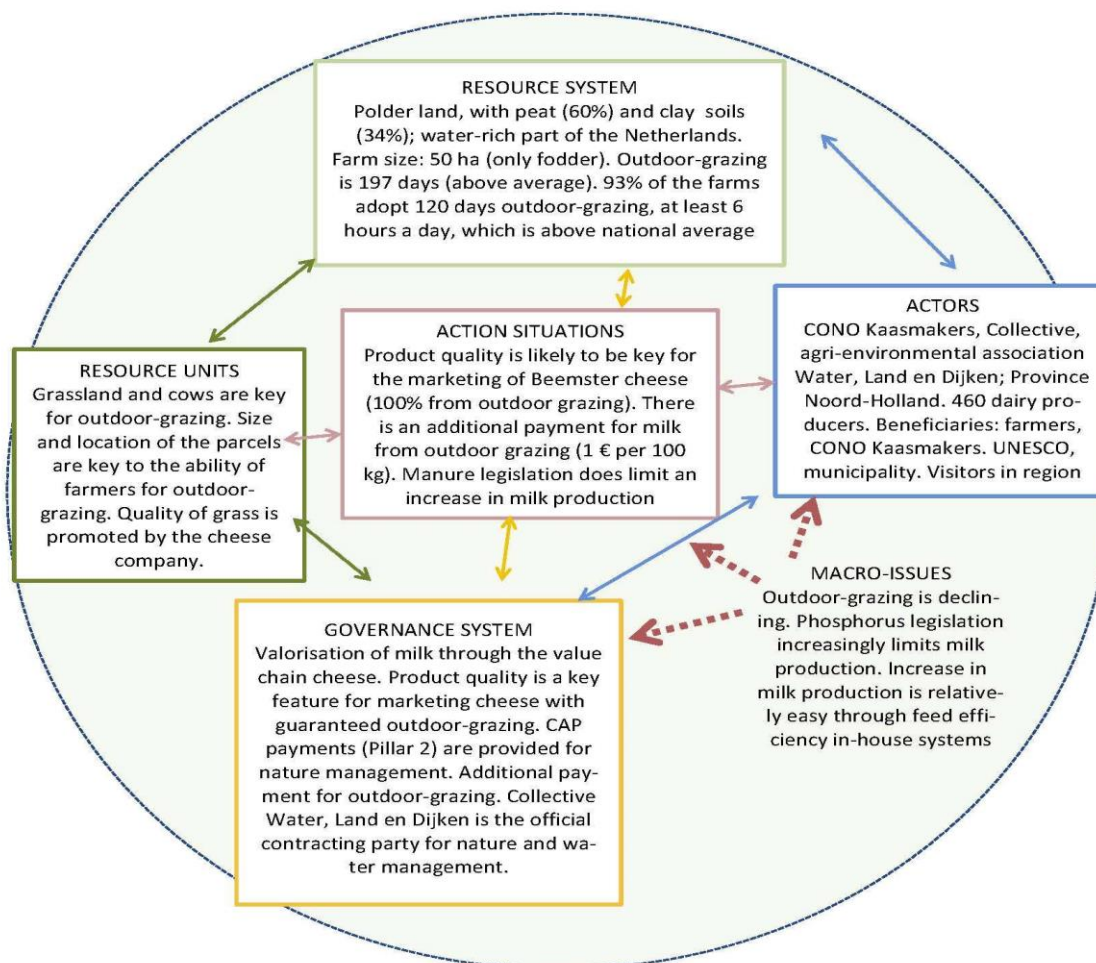


Figure 3 Social-ecological system of outdoor grazing in the Netherlands

Landscape features and product quality through outdoor grazing are used in the marketing of Beemster cheese. Landscape features have a public good character. Such farming practice might also be beneficial for animal health. Ammonia emissions in outdoor-grazing are below those with in-house production systems. Although complex and dependent on farm management practices, it might also be beneficial for nature. Outdoor-grazing is an important management practice in dairy farming. It might also be a way to communicate the broader context of farming in a region (Figure 3).

Outdoor-grazing is part of the branding of the products and grass-fed production is considered essential for product quality. Beemster cheese, for example, is secured from outdoor-grazing systems. There is a trade-off between manure legislation and outdoor-grazing: increasing the scale of production tends to be more efficient with in-house production systems. Compared to outdoor-grazing, dairy producers with in-house production systems tend to be better able to improve the efficiency of feed consumption. This is especially relevant for producers who target to optimise milk production at constant levels (Van der Schans and Van der Weijden, 2016). Environmental legislation is nowadays largely felt to be the new system to limit milk production and replacing the former milk quota regime. Synergies with outdoor-grazing and dairy farming could be achieved when the field parcel is sufficiently large to provide food and fibre. Both the size of the field parcel near the stable and the number of dairy cows are critical for outdoor grazing.

2.2 Short characterisation of key drivers/motivations

The size of the home plot (ha) and the number of dairy cows are essential farm management features to enable outdoor grazing. More than 90% of the dairy farms who are member of the CONO Kaasmakers have adopted outdoor grazing (120 days, at least 6 hours a day). The home plot on average is 34 ha in the western part of the country, which is approximately two thirds of total farm size. It contributes to reaching outdoor grazing for around 200 days per annum (Table 1).

Agricultural policy

Pillar I payments at dairy farms (with outdoor-grazing) in the western (polder) part of the country on average is some k€18.6 per farm. This is smaller than the average of all dairy farms in the Netherlands (k€24.4 per farm). While total milk production at the first group does reach 626,000 kg milk per holding, it is 771,000 kg milk per holding at the average of all dairy farms. CAP Pillar II payments at dairy farms with outdoor-grazing in the western part of the country on average is some k€5.7 per farm, which is considerably above that of the average of all dairy farms in the Netherlands (k€2.3 per farm).

Market prices and premium for outdoor-grazing

Market prices in 2014 were around €41 per 100 kg of milk. Since then, market prices rapidly declined and reached around €27 per 100 kg of milk (summer of 2016). Some farmers interviewed targeted at maintaining revenues by increasing milk production, and reduced costs because the fairly low costs of feed, energy and capital.



The premium for outdoor-grazing It was still fairly small in 2014. By then, the premium for outdoor-grazing on average was some €2,300 per holding in the western polder region of the Netherlands. By 2016, the payment is some €1.00 per 100 kg of milk, and CONO has announced to double the payment in 2017, to reach €2.00 per 100 kg of milk. The outdoor-grazing premium would be some €15,000 per farm for a dairy farm with 750,000 kg of milk.

Table 1 Features of dairy farmers with outdoor grazing in 'Westelijk weide' and other parts of the Netherlands, relative to average of dairy farming in the country (situation in 2014)

Feature	Farms with outdoor-grazing (120 days, 6 hours a day)		Average of all dairy farms in the country
	Westelijk weide	Other parts of country	
Farm size (ha)	49	50	53
Size of home plot (ha)	34	24	24
Number of dairy cows	80	87	95
Milk production (1,000 kg milk)	626	684	771
Milk per cow (kg)	7,804	7,879	8,109
Number of days with outdoor grazing	203	197	150
Share of farms with outdoor grazing (120 days, 6 hours a day) (%)	100	100	74
Share of peatland in total land area (%)	61	9	16
Share of sandy soil in total land area (%)	5	60	54
Milk price (€ per 100 kg)	41.5	42.8	42.5
Income from farm operation (1,000 €)	82.6	62.7	65.2
CAP - Pillar one payments (€ 1,000)	18.6	21.8	24.4
CAP - Pillar two payments (€ 1,000)	5.7	2.2	2.3
Outdoor-grazing premium (€ 1,000)	2.3	3.3	2.4
Total revenues per cow (€)	3,452	3,528	3,640
Revenues from milk (€ per cow)	2,912	3,280	3,292
Revenues from dairy products (€ per cow)	323	8	110

Source: LEI-Informatienet.

Revenues

Total revenues per cow are around €3,500 per cow, and includes milk (€2,912 at dairy farms in the western polder region of the Netherlands who also adopt outdoor-grazing), complemented with €323 from on-farm sales of processed dairy products (e.g. yoghurt, cheese).

Environmental policy

In anticipation of the abolishment of the milk quota regime, milk production has increased by most farmers in the past couple of years. The excess amounts of phosphorus increased rapidly, mainly with dairy farming. A proposal is send to Parliament (September 2016) to introduce right to the amount of phosphates produced in dairy farms. Farmers will only be eligible to grow dairy cattle in coming years if they have adequate amounts of phosphate rights. Such rights will be admitted by early 2017 and the reference level relates to the number of cows by 2 July 2015, when the system was introduced. The production rights are transferable, but as part of each transaction, they are reduced by 10% of the amounts trans-



ferred. Such reduction of production rights is not applicable within a family from one generation to the next. The system will be applicable to all dairy farmers, but the generic reduction will become less severe for farmers with a large size of agricultural land related to the number of cows.

Nature management

Nature management is aimed to conserve nature on farmland. National programs with compensatory payments to farmers already started in 1981 with a specific focus on the conservation of specific species, including meadow birds (e.g. godwit).

Management programs include the protection of nests and farmer collectives have been designed to organise the programs.

By 2016, there are 40 collectives in the Netherlands. The province of Noord-Holland has three collectives: Hollands Noorden; Water, Land en Dijken; Noord-Holland Zuid. Programs in the province are targeted to core areas for meadow birds (Kuiper, 2015). The collectives conclude contracts with farmers and secure the transfer of agri-environmental payments to 15,000 farmers (national total). The total amount transferred to farmers in the Netherlands (€60 million) is from EU and provincial funding. These payments cover the nature management practices adopted by farmers. The collectives are regionally targeted, responsible to monitor nature management and conclude management contracts for (i) field border management, (ii) protection of meadow bird and (iii) maintenance of landscape elements. Nature policies are monitored by provincial government. In addition, collectives also secure ecological cohesion and strive to optimise quality of the programs.

2.3 Description of other important variables chosen

Landscape features are an important public good related to outdoor-grazing. Such farming practice might also be beneficial for animal health. Ammonia emissions in outdoor-grazing are below those with in-house production systems. Although complex and dependent on farm management practices, it might also be beneficial for nature. Outdoor-grazing is an important management practice in dairy farming. It might be a way to communicate the broader context of farming in a region.

The trend in outdoor-grazing (currently) is stabilizing. Outdoor-grazing requires grassland and it largely takes place at field parcels that are near the farm house that also need to be sufficiently large for grazing. The field plot needs to be sufficiently large to enable for synergies of outdoor-grazing and dairy farming could be achieved when the field plot is sufficiently large to provide food and fibre. This is a key factor enabling farmers to maintain outdoor-grazing for their dairy cattle.

There is a trade-off between manure legislation and outdoor-grazing: increasing the scale of production tends to be more efficient with in-house production systems. Environmental legislation is nowadays largely felt to be the new system to limit milk production and replacing the former milk quota regime.



2.4 Discussion of the SES

Figure 4 presents a picture of outdoor-grazing in the Netherlands. It shows that fields still could look empty. Outdoor-grazing takes place through rotational grazing systems, mainly at the field parcel near the farm house.



More than 90% of the dairy cows graze outside. Rotational grazing systems are applied. This implies that most of the fields could look empty. However, the grass from the whole farm is used to feed dairy cattle.

Figure 4 Outdoor grazing in the western part of the Netherlands (photo: Floor Brouwer)

3 Status of the SES and potentials

3.1 Description of the SES

There is several tensions and synergies between the provision of ESBOs:

- Outdoor-grazing premium is important to acknowledge the final products (e.g. cheese) are based on farming systems grazing outside for a considerable part of the year. It reflects the appreciation by consumers and is part of a business strategy towards the national and international market (e.g. Germany). The outdoor-grazing premium creates synergies with open landscape features.
- Image is important for the provision of ESBOs. Management of landscapes through outdoor-grazing systems are important for the image of a region. Outdoor-grazing is appreciated by the local population, as expressed by media attention. Some farmers also invite school classes to visit their farm and explain the contribution of the farm to the region and beyond.
- Compared to in-house production systems, the use of minerals by dairy cattle is less efficient with outdoor-grazing. In addition, phosphorus rights are going to be introduced in 2017, equivalent to the maximum allowable amount of phosphorus from livestock manure during a calendar year. It remains to be agreed how extensive production systems are affected.
- Labour requirements of outdoor-grazing could create tensions with maintaining open landscape features. Outdoor-grazing requires additional labour for transfer of dairy herds, but reduces some of the labour needs for mowing of grass. Compared to in-house production-systems, outdoor-grazing is more unpredictable and requiring more labour.



- Monitoring of outdoor-grazing remains a challenge. Monitoring of outdoor-grazing is currently implemented by CONO Kaasmakers, and the dairy farms keep track of outdoor-grazing through a calendar. The co-operative visits the farm to inspect outdoor-grazing. In addition, Qlip (quality assurance in agrofood) does perform a selection of farm visits to monitor outdoor-grazing. More advanced ICT technology (e.g. GPS system) could create synergies with the maintenance of open landscapes.

3.2 Relationships between farming and forestry, and the quantity and quality of ESBos

The size of the field plot near the farm and the number of dairy cattle are critical for outdoor-grazing. Outdoor-grazing is positively perceived by the public as a landscape feature, and therefore depends on these features of dairy farming.

3.3 Key motivational, institutional and socio-economic factors

Image motivates farmers to maintain outdoor-grazing. Outdoor-grazing is an important feature of the region towards local population. The image towards the local population is a feature of outdoor-grazing. Moreover, membership of a co-operative CONO Kaasmakers promotes quality products, including milk from outdoor-grazing systems. The special quality of the grass is achieved from the sea-wind, adding to the taste of the cheese.

The price of land is a key socio-economic factor for outdoor-grazing, mainly with an increase in milk production. Additional land is needed to enable an increase in production (among others because of environmental legislation). Land prices are high (the order of magnitude of €80,000 per hectare), especially in the highly productive clay area with bulb growing as intensive production systems and high revenues per hectare.

3.4 Levels of provision, trends and determinants

Outdoor-grazing and the maintenance of open landscapes are highly perceived. The future trends of outdoor grazing depend on:

- Market conditions of the quality cheese. The premium for outdoor-grazing increases over time (starting 2017, to be €2.00 per 100 kg of milk) is noticed by consumers of cheese and used in the marketing in the Netherlands and abroad (e.g. Germany).
- Trends in environmental legislation (e.g. to apply fertilizers and organic manure, and eventually dispose excess of manure). The costs of transport of excess amounts of manure could be €12 per m³. Disposal of manure at short distance might cost around €5 per m³, and to amount several thousands of euro.
- Number of dairy cattle per farm. Monitoring and enforcement of outdoor-grazing systems would require additional ICT technology (e.g. GPS systems) when milk production per farm increases.

4 Conclusions derived from analysis in Steps 1 and 2

4.1 Key findings on the particular SES and its potentials

Outdoor grazing is branded by the cheese makers and other dairy processors in the Netherlands. The current premium for outdoor grazing is governed by dairy processing companies in the Netherlands. Milk processors have adopted diverse systems with respect to the level of payment and requirements. In our case study, CONO cheesemakers offers a premium of € 1 per 100 litre of milk (situation 2016), subject to outdoor-grazing of 120 days (at least 6 hours a day). The company will double the premium from 2017 onwards, to be € 2 per 100 litre of milk. Dairy farmers who comply with outdoor-grazing requirements receive the premium if the cows stay out for at least 120 days and a minimum of 6 hours a day. The premium is to acknowledge appreciation by the consumers for outdoor grazing and evidence to offer a 'fair price' to farmers. Outdoor grazing is important in branding the cheese.

Including the value chain more explicitly in the methodology is important for private based mechanisms. A number of challenges remain that could potentially affect outdoor-grazing in the future, and subsequently the provision of ESBOs:

- It remains a challenge what is the perspective of public goods related to dairy farming in the coming ten to twenty years. The sector does currently face a highly volatile market with low prices. It is important how to strengthen the link between economy and ecology. Farmers tend to focus on modernization, increasing production and intensification. A new link between economy and ecology (e.g. to link nature with water management) could offer perspectives to dairy farming. This needs to be explicitly included in the methodology.
- A fixed income might be provided to the farmer for the provision of public goods (e.g. nature management). Moreover, primary production would be delivered to a volatile market.
- It remains unknown what is the role of public sector for the maintenance of public goods. The public sector (e.g. provincial authorities) might be mainly to facilitate the provision of public goods, rather than control and transfer payments. Example: collectives in the Netherlands have bought drones to monitor nests for birds in grassland.

PEGASUS could support the further improvement of outdoor grazing through facilitation and communication. Communication of our observations with the actors in place (farmers, agri-food chain, collectives and policy) is considered more important than sharing reports.

4.2 Governance arrangements and institutional frameworks

Payments for delivery of public goods might be most appropriate if it could be linked with product quality rather than public payments. Public policy aims to reverse the decline in outdoor-grazing and have 80% of the cows in outdoor-grazing by 2020. It remains a challenge how outdoor-grazing could be secured in the coming ten to twenty years. Such an understanding could offer perspective to the dairy sector in a highly volatile market.



The figure shows the declining trend of outdoor-grazing. Recently, there is a stabilization in the number of grazing cows. While 90% of the cows were managed by outdoor-grazing in 2001, this figure reduced to 70% (2014). The number of cows with outdoor-grazing in the western part of the Netherlands exceeds national average.

4.3 Other enabling or limiting factors

Several factors enable outdoor-grazing and subsequently support the provision of ESBOs:

- The business payment scheme does acknowledge outdoor grazing is a quality premium for dairy farmers. Branding outdoor grazing will enable dairy farmers to maintain landscape management, possibly with other environmental and social benefits from dairy farming.
- Outdoor grazing showed a declining trend in the past decade and stabilized in the recent past. In order to meet the availability of grass to be able to feed the dairy herd, farm structure features are critically important to maintain outdoor grazing. The two most important ones are the number of dairy cows and the size of field parcel near the stable.
- Appreciation by consumers is a key factor enabling outdoor-grazing. It is also perceived by consumers as a notification of quality of production. The size of the parcel near the farm house is a key factor whether or not dairy farmers are able to maintain outdoor grazing.

The main factors limiting outdoor grazing relate to the abolishment of milk quota. The abolishment of milk quota induced an increase in the number of dairy cows in the Netherlands, which eventually reduces the possibility to feed all dairy cows from the grassland that is near the farm house. In addition, manure legislation tends to stimulate livestock producers towards in-house production systems, mainly to control emissions and dispose livestock manure.

4.4 Reflections on the case study methodology used and potential improvements

There is a good interest in the agribusiness to contribute to European discussions, including the CAP. However, dairy farmers face highly volatile market conditions (e.g. market prices highly fluctuate) and there is major debate on the future of environmental legislation in the Netherlands, largely affecting dairy production. Therefore, we need to match the longer-term ambitions of PEGASUS with the current debates in the farming sector.



5 Research and action mandate for Steps 3 and 4

5.1 Agreed objectives of activities to be undertaken with initiative/stakeholders

A proposal for Steps 3 and 4 will be submitted to CONO Kaasmakers in September. The proposed study is foreseen to focus on the future potential of outdoor-grazing and the role of the private sector in the provision of ESBOs. Possible questions:

- What is the role of the private sector in the provision of environmental and social benefits? Which ESBOs are addressed from the private sector schemes?
- What is the main motivation of the private sector initiative? Consider among others, policy failure and market opportunities. Please explain.
- Describe the parties in the private sector (delivering to farmers, processors, traders, retail) and their motivation. What are the markets they operate (regional-national-international; quality products; sustainability; public concerns like environment or animal welfare; human health).
- What is the interplay between public policy and market mechanisms (including private schemes)? Which public policies (environment, climate, spatial, CAP)? What are the links that currently exist between the private sector scheme and the CAP?
- Are the private sector schemes targeted at specific farming systems (mainstream, intensive versus extensive)?
- Are there ESBOs that are not adequately covered by the private sector scheme? Elaborate please.
- What is the future potential of the private sector initiative? Is it robust?
- Are there any benefits and/or risks related to the provision of ESBOs through private sector schemes relative to public sector schemes? Consider for example the importance of monitoring from the private sector versus monitoring of public policies.
- Could you indicate any gaps regarding the maintenance and/or enhancement on the provision of ESBOs through the private schemes and could you how these could potentially be filled through CAP measures? Please elaborate payments versus outcomes.

5.2 Innovations, impact, transferability, potential risks and research bias

CONO Kaasmakers is interested to participate, and a proposal for Steps 3 and 4 will be discussed in September 2016. Meanwhile we seek for involvement of the provincial authority. The existing premium for outdoor grazing is governed by dairy processing (e.g. cheese makers). Milk processors have adopted different systems, and CONO has recently decided to increase the premium from 2017 onwards. We plan to examine the premium in the context of appreciation and valorisation of ESBOs (mainly landscape value) through farmers, consumers of milk products (e.g. cheese, ice) and people living in a region. We consider the business case to be very innovative in the context of Europe.



The premium for outdoor grazing is an initiative taken by the dairy sector. The proposed case study is highly relevant in the context of the abolishment of milk quota regime. Following the rapid increase of milk production in the recent part which increases pressure on the manure market. There is a major discussion to introduce additional manure legislation. Farmers complain that quota on the production of phosphorus in manure is increasingly felt as a new type of legislation to control milk production. Manure legislation could increase the share of farming with in-house production systems. Outdoor grazing is politically sensitive as illustrated by the hearing in the Dutch parliament on the topic, last July. CONO has increased the premium recently.

The case is relatively small with respect to the area, which complicates the potential for up-scaling. Outdoor grazing is declining in Europe, due to intensification of production and increase of animal production per farm. The learning potential is embedded in the factors that play a role. Replicability also depends on the context in other areas. Other products sold as specific niche markets for different attributes of products could learn from this case. There is potential to compare the premium for outdoor grazing, initiated by the business sector with CAP support payments and milk prices.

6 References

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7 ANNEX

7.1 Documentation of research and action progress

The following stakeholders are interviewed:

May 25, interview with Franck Kuiper, Province Noord-Holland. Discuss the importance of collectives in the context of agri-environmental programs, and the increasing importance of provincial authorities towards agriculture and nature management.

June 2, interview with Grietsje Hoekstra, CONO Kaasmakers, Westbeemster. Discuss premium for outdoor grazing. Outdoor-grazing is considered essential to secure product quality (mainly cheese). The premium has stopped the decline in outdoor-grazing. The size of the home-plot might become a constraint with an increase in the number of dairy cows per farm.

August 5, interview with Erik Coevert, dairy farmer in Lambertschaag.

August 5, interview with Arnold Druif, dairy farmer in Midwoud.

August 12, interview with Irma Steenman, dairy farmer with parents in Hobrede

August 29, interview with Grietsje Hoekstra, CONO Kaasmakers, Westbeemster. Reporting on the interviews and discuss initial plan for a follow-up. A proposal will be send to CONO Kaasmakers before September 15.

